

ATOMIC ENERGY

THE FIRST AND ONLY

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Dear Sir:

Hearings on legislation to amend the Atomic Energy Act (1946) were opened last week in Washington by the Joint Congressional Committee on Atomic Energy, which is seeking views of representatives of various groups. (The legislation under consideration would make fundamental changes in the 1946 Act: patent ownership would be permitted, fissionable material control would be changed, restrictions on exchange of atomic information and foreign agreements would be relaxed, etc.) Arguing for industry ownership of fissionable materials, with Government still exerting control, was Walker L. Cisler, president, Detroit Edison Co. Mr. Cisler pointed out that Government ownership of fissionable materials would result in difficult problems of financing were a public utility to decide to construct a nuclear power plant.

Concerning patents in the nuclear field, Alfred Iddles, president, Babcock & Wilcox, told the Committee (as above) at a hearing that several companies working under contract to the USAEC had neglected to file patents on "bright ideas" which had occurred to their men because of the restrictions on private ownership of such patents. If such restrictions were removed, he noted, this would encourage private industry. The former deputy general counsel of the USAEC, Bennett Boskey, told the Committee that the compulsory licensing provision of the present law should be retained. This provision permits the USAEC to force certain patent holders to license others if the patents are "affected with the public interest". While this power of the USAEC has never been used, Mr. Boskey said, he advised that it be retained as a "safety valve".

The views of the small firm toward nuclear patents were given the Committee (as above) by John R. Menke, president, Nuclear Development Associates, Inc. Dr. Menke asserted that allowing private inventors to obtain patents in nuclear fields would benefit small as well as large concerns. He opposed the view that lack of such restriction would lead to a monopoly by the large concerns which have been connected with nuclear work, under USAEC contract, since the inception of the nuclear program. A stand opposite to Dr. Menke's was taken by spokesmen for the American Public Power Association who said that the suggested changes in the law would create a patent monopoly. Samuel B. Morris, general manager and chief engineer of the Los Angeles Water and Power Department, and Gilmore Tillman, Los Angeles attorney, acting for the APPA, observed that the proposed changes would "not merely permit but would invite the creation of a patent monopoly". The proposed changes were, however, endorsed by Theodore S. Kenyon, chairman of the New York Patent Law Association's atomic energy committee.

An estimate that the size of the civilian component of the U. S. nuclear energy enterprise was a \$459,000,000 industry was given the Committee (as above) by Newton I. Steers, president, Atomic Development Mutual Fund, Inc. Mr. Steers spoke from his experience in investing for his organization in nuclear enterprises.

BUSINESS NEWS...in the nuclear field...

ADDITIONAL URANIUM ORE PROCESSING FACILITIES TO BE CONSTRUCTED:- The Galigher Co., Salt Lake City, Utah, has now been awarded a USAEC contract for the design of additional plant facilities at Monticello, Utah, to treat refractory uranium ores which cannot be processed by the existing Government-owned plant there. Under its contract, Galigher will prepare the engineering design, including plans, specifications, and cost estimates for the addition to the plant which will treat uranium ores by an acid leaching process. In the Fall, when it is estimated Galigher will have completed its work, the USAEC will advertise for bids for constructing the addition.

NUCLEAR INSTRUMENT MANUFACTURER RECEIVES AIR FORCE CONTRACT:- A research and development contract for approximately \$40,000 has been awarded Tracerlab, Inc., Boston, by the Air Force Cambridge Research Center. Under the contract, Tracerlab will develop an airborne tracer technique for meteorological research involving a device to inject into air a gas containing a small amount of radioactive tritium; an apparatus for collecting samples of air at a distance; and a method of analyzing these samples to determine the amount of radioactive material present. According to Dr. Edward Shapiro, of Tracerlab, the technique is so sensitive that one part in 100 trillion can be measured easily.

NUCLEAR POWER STUDY TO BE UNDERTAKEN BY NEW GROUP:- Some five utility companies in the Pacific Northwest have now entered into an agreement with the USAEC under which the companies will study the feasibility of designing and constructing a nuclear reactor for the production of electric power. This project brings to 13 the nuclear power studies being made under the USAEC's industrial participation program. The utility companies taking part in this project are the Montana Power Co., Butte, Mont.; Washington Power Co., Spokane, Wash.; Pacific Power & Light Co., Portland, Ore.; Portland General Electric Co., Portland, Ore.; and the Mountain States Power Co., Albany, Ore.

CONTRACT AWARDED AT NUCLEAR REACTOR STATION:- Cisco Construction Co., Portland, Ore., has now been awarded a USAEC contract for construction of a nuclear reactor test facility building at the reactor testing station, Idaho Falls, Idaho. Cisco's bid on the work was \$274,947, the lowest of 8 submitted. Next lowest bidder was H. K. Ferguson Co., San Francisco, with a proposal of \$286,565.

RAW MATERIALS...radioactive mineral & ore development...

UNITED STATES:- Among those firms exploring for uranium in Colorado is Calumet & Hecla, Inc., which has a small party out in the field, E. R. Lovell, president, recently told the annual meeting of that firm....At the Big Indian district property of Cal Uranium, near Moab, Utah, a drilling program has shown that an orebody ranging from 2 to 25-ft., may extend for some 2500-ft., on the property, according to M. Ruddock, vice-president of that company....At Lander, Wyoming, drilling is being undertaken on the original uranium discovery made there in the Red Desert south of Crooks Gap. Work will be done by Bice Drilling Co., of Billings, for the owners of the 26-claim property, L. J. Bergsten and V. R. Herring. (It was the discovery of these men which started the intensive exploring and staking activity in this area; their find was made last November.)

CANADA:- It is the intention of Gunnar Uranium Mines to raise \$16 million to put its property into production, with the financing to be done by Canadian financial institutions, officials have now stated. Further confirmation of Gunnar's high reserves were made in the last fortnight by Dr. John Convey, director of the Government's Mines Branch, Ottawa, who stated that his department had completed testing of the Gunnar ore and the results of the testing definitely indicated over 90% recovery, using processes worked out for the company by the department. Dr. Convey also noted that the designed capacity will make Gunnar one of the largest private uranium plants in North America. (Exploratory drilling on the property had indicated reserves sufficient for 15-years operation, with a compact orebody that lends itself to low mining costs; it is believed that at least 2.5 million tons may be extracted by open pit mining.) McNamara Construction Co. have the contract for the stripping of the orebody; necessary earth and rock moving equipment were flown in, last Winter.

NEW PRODUCTS, PROCESSES & INSTRUMENTS...in the nuclear field...

FROM THE MANUFACTURERS:- New model 161A scaler is for use with Geiger or scintillation counters; it is said to be capable of counting 120,000 counts-per-minute with a coincidence loss not exceeding 1%. The instrument is a complete electronic unit requiring only a detector and an accurate timer. It has a scaling factor of 256; a stabilized high-voltage supply (for the detector) is built in, and there is also a six digit register.--Nuclear Instrument & Chemical Corp., Chicago 10, Ill.

Newly designed fast neutron counters, models 201, 2,3,4, and 8, using Oak Ridge critical chamber sizes, are said to give excellent operating characteristics plus ruggedness heretofore unobtainable commercially. Counters of one, two, and three chambers are filled with pure methane gas to a pressure of 150 cm.; operating voltage is 2100 volts. Counters having more than three chambers are filled to a pressure of 13.2 cm. and operate at 2100 volts. Chamber size is 1.2-in. long, by 1.8-in. diameter. Each chamber is completely lined with 1/16-in. polyethylene, and is separated from the one next to it by a 1/10-in. brass spacer to reduce gamma pile-up effect.--Radiation Counter Laboratories, Inc., Skokie, Ill.

MANUFACTURER'S & OTHER LITERATURE: A new catalog describing what it terms its CBR, or "chemical, biological and radiological system", for the laboratory using radioactive materials, is now offered by Kewaunee Manufacturing Co., Adrian, Mich.

A bulletin describing its model 952 counter for Geiger or proportional counting of solid samples in an inert atmosphere is now available from Atomic Instrument Co., Cambridge 39, Mass. (Design of this counter is such that rapid sample change-over may be made without contamination of the counting chamber.)

Information on the design, construction and operation of a canned electric motor driven pump, developed and built for the dry land prototype of a nuclear powered submarine, may now be obtained without cost from the USAEC's Pittsburgh Area Office, Bettis Plant, P. O. Box 1105, Pittsburgh, Pa. Although intended primarily for use in connection with the prototype submarine thermal reactor nuclear power plant, and in the nuclear propulsion plant for the U.S. Navy's submersible NAUTILUS, the pump may find industrial and research applications. The canned pumps, which are absolutely leakproof, are used in the nuclear power plants to pump the primary coolant from the heat-generating reactor to the steam-generating heat exchanger and back again. The motor which circulates this coolant (hot water or liquid metal) has its squirrel-cage rotor contained in shrink-fit jacket of Inconel, and this rotor turns within a stator that is likewise enclosed in Inconel. The space between is filled with the fluid that is being pumped through the reactor circuit. The bearings, inside the stator, are lubricated by the fluid passing through. (The pump was developed by Westinghouse Electric Corp. under its USAEC contract on the submarine thermal reactor. The Byron Jackson Co., Los Angeles, and Allis-Chalmers Man. Co., Milwaukee, also assisted in the pump's development.

Cesium-137, the most important long-lived gamma emitter in waste fission products, has now been separated, purified, and fabricated into pellets, through the efforts of a group at Oak Ridge National Laboratory. Oak Ridge now has two such pellets, each slightly over $\frac{1}{2}$ -in. in height, $1\frac{1}{4}$ -in. in diameter, and averaging a little over 1-oz. each in weight. One pellet has 760 curies of radioactivity; the other, 780-curies. Production of the pellets was the culmination of a $2\frac{1}{2}$ year cesium program by the Oak Ridge group. In November, 1953, the group undertook separation and purification operations, and fabrication of the source was in March of this year. The new source will be held for observation at the Laboratory until July, and will then be installed in the Oak Ridge Institute of Nuclear Studies' teletherapy unit. It is expected that ORINS will devote some time to evaluating the cesium-137 source, before it is used in cancer research. (Cesium-137 has great potentialities for applications where X-ray machines, radium or radioactive cobalt-60 are now commonly used. Although performing essentially the same functions, it offers several advantages over these radiation sources, such as its relatively long-lived intensity, and its favorable range of energy. Its gamma radiation energy is 0.66 Mev, as compared with 1.2 Mev for cobalt-60. This lower energy is sufficient for successful deep therapy, yet it requires less shielding than a cobalt source.)

NEW BOOKS & OTHER PUBLICATIONS...in the nuclear field...

Selected USAEC Reports of Interest to Industry. This series (of which Part 1 has been previously listed in this LETTER) comprises seven individual sections, in the following categories: Part 1, Metallurgy & Ceramics (35¢); Part 2, Chemistry & Chemical Engineering (45¢); Part 3, Nuclear Technology (35¢); Part 4, Electronics & Electrical Engineering (35¢); Part 5, Mechanics & Mechanical Engineering (25¢); Parts 6 & 7, Construction, Civil Engineering, and Mining Geology (25¢); Parts 8 & 9 Industrial Management and Health & Safety (25¢).--Office of Technical Services, Wash. 25, D.C.

The 5-Year Nuclear Reactor Development Program of USAEC; A Report by Joint Congressional Committee on Atomic Energy. (No. Y4. At 7/2:R 22/2) (15¢).....Annual Report for 1953 of Federal Civil Defense Administration (No. FCD 1.1:953)..... Superintendent of Documents, Wash. 25, D. C.

Defense Minerals Exploration Program. As revised Jan. 1954.--Defense Minerals Exploration Administration, Dep't. of the Interior, Wash. 25, D.C. (n/c/)

Essays in Science; Albert Einstein. A translation from the German of "Mein Weltbild". Certain essays have been omitted in this English version which is an effort to present to the general reader some of the distinguished scholar's papers dealing with science.--Philosophical Library, Inc., New York 16, N. Y.

Radioactive Materials. Tracer compounds produced in the British nuclear energy program and available commercially. (Distributed in the U.S. by Nuclear Instrument & Chemical Corp., Chicago, Ill)--The Radiochemical Centre, Amersham (Bucks) England (n/c)

Supplement No. 1 to the Atomic Energy Information Kit. (For the electric companies public information program). A non-technical compilation. Supplement and kit available from Bozell & Jacobs, Inc., New York 36.

AT SCIENTIFIC & OTHER MEETINGS...papers on nuclear subjects...

The problem of dust in uranium refining plants was recently outlined before the 1954 Industrial Health Conference (Chicago) by H.I. Miller, Jr., of Catalytic Construction Co. (Philadelphia). Mr. Miller pointed out that the company's approach to the ventilating and dust control problem, for a uranium refining plant, followed the usual industrial hygiene engineering principles. He observed that in such a plant, the value of the product and its toxicity indicate dust-tight equipment, so that as little dust as possible will have to be collected and rehandled. Hazards present include the ingesting of uranium particles emitting alpha rays, which may be quite harmful. The gamma ray emitters in pitchblende can also be quite dangerous, he pointed out. As a result, the buildings in which pitchblende is handled are walled off from the rest of the plant.

Technical and non-technical sessions of the International Congress on Nuclear Engineering, June 20-25, Ann Arbor, Mich. (this LETTER V. 11, No. 6) will furnish wide coverage of nuclear subjects. Among the non-technical sessions will be a symposium on "Employer's Viewpoint as to Training Desirable for Nuclear Engineers", with Dean R.C. Ernst and Dean G.G. Brown, University of Mich., presiding. Two other non-technical sessions will deal with the "Social Impact of Nuclear Energy", as related to safety and the citizen; health; religious thought; education; military tactics; scientific research; and the law.

Technical sessions (of the Congress) will be devoted to "Research and Educational Reactors" (two sessions); "Materials of Reactor Construction" (two sessions); "Reactor Technology" (four sessions); "Reactor Fuel Refining and Preparation" (two sessions); "Separations Technology" (two sessions); "Nuclear Power Reactors" (two sessions); "Applications and Uses of Radioactive Products" (two sessions); and "Automatic Computation in Nuclear Engineering" (one session). (A series of three volumes, consisting of these papers, will be available from the American Institute of Chemical Engineers, 120 E. 41st St., New York 17, at \$4.25 per volume to non-members of the A.I.Ch. E., and \$3.25 to members.)

The program of the first national annual meeting of Professional Group on Nuclear Science of the Institute of Radio Engineers (Chicago Section) to be held in Chicago, Oct. 6-7, 1954, will be divided into four technical sessions of invited and contributed papers: (1) Nuclear Medical Electronics; (2) General Nucleonic Instrumentation; (3) European and American Reactor Technology; and (4) European and American Particle Accelerator Technology.

ATOMIC PATENT DIGEST...recent U. S. grants in the nuclear field...

Electronic scaling circuits. Comprising (in part) a series of stages connected in cascade, each of these stages including a pair of trigger tubes fed through a rectifier and operating alternately in response to pulses fed thereto to pass alternate pulses; a recorder coupled to the last of these stages to record a predetermined multiple of the pulses fed to the system; and associated electronic circuitry. U. S. Pat. No. 2,676,756 issued April 27, 1954; assigned to United States of America (USAEC). (Inventor: Willard Q. Gulley)

Catalytic apparatus for isotope exchange between a vapor of a liquid and a gas. Comprises (in part) an elongated shell with separate means for introducing the liquid into one end, and for withdrawing from the other end liquid enriched in the desired isotope. A number of catalyst beds are located in the path of the gas through the shell with vapor-liquid contacting means between successive catalyst beds. U. S. Pat. No. 2,676,875 issued April 27, 1954; assigned to United States of America (USAEC). (Inventor: Frank T. Barr)

Apparatus for generating ions of a metal. Comprises (in part) a grid-like platform of tungsten metal having a renewable adherent coating of this metal; thermionically emissive cathode means spaced from and facing opposite faces of this platform; with an evacuated envelope enclosing the platform and cathode. A source of current maintains an arc discharge between the cathode and both faces of the platform as anodes. U. S. Pat. No. 2,677,060 issued April 27, 1954; assigned to United States of America (USAEC). (Inventors: William M. Woodward and Lincoln G. Smith)

Ion generator. Comprises (in part) an evacuated chamber enclosing a cup-shaped anode containing a vaporizable material of the ions desired, with a cover for closing all but a peripheral portion of the open end of this cup-shaped anode. A filamentary cathode is immediately adjacent the outside portion of this cover. Means are provided to withdraw the positive ions formed by an arc discharge between the anode and the cathode when energized by a suitable electrical potential. U. S. Pat. No. 2,677,061 issued April 27, 1954; assigned to United States of America (USAEC). (Inventor: Robert R. Wilson.)

Apparatus for measuring the frequency of a frequency-modulated oscillator during an interval of its modulation cycle. Comprises (in part) a source of standard oscillations of higher frequency than the frequency-modulated oscillator; amplifying and recording means for registering the number of standard oscillations occurring during the interval; pulse forming means for developing a pulse of voltage for each oscillation of this frequency-modulated oscillator; and means for counting and recording each of these pulses. U. S. Pat. No. 2,677,104 issued April 27, 1954; assigned to United States of America (USAEC). (Inventor: Robert L. Chase.)

Process of producing uranium tetrachloride. Comprises (in part) reacting carbon tetrachloride with an oxide of uranium at a reaction temperature within the range of 425-475 deg. C., and maintaining the temperature within this range until the oxide is substantially completely converted to crystalline uranium tetrachloride, the major portion of the product having a crystal grain size between 10-and 60-mesh. U. S. Pat. No. 2,677,592 issued May 4, 1954; assigned to United States of America (USAEC). (Inventor: James M. Carter.)

Stabilization of pyrophoric metal catalyst formed by reduction of a compound of this metal. Comprises (in part) exposing the reduced metal to an atmosphere of carbon dioxide, and adding oxygen in controlled amount to prevent the temperature from rising above about 125 deg. F. U. S. Pat. No. 2,677,668 issued May 4, 1954; assigned to United States of America (USAEC). (Inventor: Jacob Elston Ahlberg.) (Note: Stepwise stabilization of such reduced metal catalysts is covered by U. S. Pat. No. 2,677,669, by the same inventor, and Government assigned.)

Neutron thermometer. Comprises (in part) a thermopile in the form of a continuous strand containing a number of alternately arranged hot and cold junctions, the hot junctions being coated with a material having a high neutron capture cross section. U. S. Pat. No. 2,677,772 issued May 4, 1954; assigned to United States of America (USAEC). (Inventor: Robert J. Moon.)

Sincerely,

The Staff,
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